

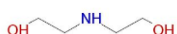
SAFETY DATA SHEET

1. IDENTIFICATION OF PRODUCT AND COMPANY

1.1. Identification of the product:

Diethanolamine

Reach Registration number:	01-2119488930-28-0008
EC number:	203-868-0
EC name:	2,2'-iminodiethanol
CAS number:	111-42-2
CAS name:	Ethanol, 2,2'-iminobis-
Index number:	603-071-00-1
IUPAC name:	2,2'-iminodiethanol
Molecular formula:	C ₄ H ₁₁ NO ₂
Molecular weight:	105.1356
Acronym:	DEA
Structural formula:	



1.2. Use of the product:

IU number	Identified Use (IU) name	Sector of use (SU)
<i>Uses by workers in industrial settings</i>		
1	Manufacturing of DEA	8, 9
2	Formulation of products containing DEA	3, 10
3	Use of DEA as an intermediate	8, 9
6	Processing aid for Paper, textile, leather	3, 22
7	Gas treatment with DEA	3, 8, 9
8	Use of DEA in metal working fluids	3, 22
9	Use of DEA in detergents and cleaners	3, 22
10	Use of DEA as additive in plastic	3, 22
11	Use of DEA as a laboratory chemical	3, 22
12	Use of DEA as additive in fuel	3, 8
13	Use of fuel	3, 22
16	Use of DEA in wood protection formulations	3
<i>Uses by professional workers</i>		
4	Use as additive in concrete and cement	22
6	Processing aid for paper, textile, leather	3, 22
8	Use of DEA in metal working fluids	3, 22
9	Use of DEA in detergents and cleaners	3, 22
10	Use of DEA as additive in plastic	3, 22
11	Use of DEA as a laboratory chemical	3, 22
13	Use of fuel	3, 22
<i>Uses by consumers</i>		
5	Use of concrete and cement	19, 21
14	Use of fuel	21
15	Use of DEA in Detergents and cleaners	21
17	Use of DEA in wood protection formulations	21

1.3. Identification of the company:

Company:	Limited liability company Sintez OKA
Address:	606000, Russian Federation, Nizhny Novgorod region, Dzerzhinsk , East industrial area Chimmash, 7 th km of East road, building 547.

1.4. Emergency Contact:

(8313) 27-25-65 7:30am – 4:15pm
 (8313) 27-25-80 round-the-clock
 Fax: (8313) 27-25-72

1.5. Person responsible for placement of the product in the market within the European Community:

Independent Petroleum Distribution SA
 Andrey Bachev
 118, Drève Richelle postal code : 1410, Waterloo , Belgium
 Phone: +3223514221
 +41417402427
 Fax: +41417402494
 mail to: ab@ipd-sa.com

2. HAZARDS IDENTIFICATION**2.1 Classification of the substance:****2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]**

Hazard classes and Hazard categories	Hazard Statements
Acute toxicity: Cat. 4 (oral)	H302: Harmful if swallowed.
Skin corrosion/irritation: Cat. 2	H315: Causes skin irritation.
Serious eye damage/ irritation eye: Cat. 1	H318: Causes serious eye damage.
Specific target organ toxicity following repeat exposure: Cat. 2	H373: May cause damage to organs.
Aquatic Chronic 3	H412: Harmful to aquatic life with long lasting effects.

2.1.2 Classification according to 67/548/EEC or 1999/45/EC

Xn; R22 Harmful; Harmful if swallowed.

Xn; R48/22 Harmful; Harmful: danger of serious damage to health by prolonged exposure if swallowed.

Xi; R38 Irritant; Irritating to skin.

Xi; R41 Irritant; Risk of serious damage to eyes.

2.2 Label elements**2.2.1 Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]**

Product identifier:

Substances: Diethanolamine

Index № 603-071-00-1

Hazard components for labeling: Diethanolamine.



Hazard pictograms:

Signal word: Danger.

Hazard statements:

H302: Harmful if swallowed.

H318: Causes serious eye damage.

H315: Causes skin irritation.

H373: May cause damage to organs through prolonged or repeated exposure.

H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements (Prevention):

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P260: Do not breathe dust/gas/mist/vapours.

P264: Wash with plenty of water and soap thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P273: Avoid release to the environment.

Precautionary Statements (Response):

P301 + P330: IF SWALLOWED: rinse mouth.

P303 + P352: IF ON SKIN (on hair): Wash with plenty of soap and water.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310: Immediately call a POISON CENTER or doctor/physician.

P332 + P313: If skin irritation occurs: Get medical advice/attention.

P362: Take off contaminated clothing and wash before reuse.

Precautionary Statements (Disposal):

P501: Dispose of contents/container to hazardous or special waste collection point.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS №	EC №	Index №	Reach Registration number	Mass content, %	Classification according		
						67/548/EEC	Regulation (EC) No 1272/2008 [CLP]	
Diethanolamine (DEA)	111-42-2	203-868-0	603-071-00-1	01-2119488930-28-0008	≥ 99	Xi , Xn, R 22, R 38, R 41, R 48/22	Acute toxicity: Cat. 4 (oral)	H302:
							Skin corrosion/irritation: Cat.2	H315:
							Serious eye damage/irritation eye: Cat. 1	H318:
							STOT RE 2	H373.
							Aquatic Chronic 3	H412:
Triethanolamine (TEA)	102-71-6	203-049-8	—	01-2119486482-31-0007	≤ 0.5	—	—	—
Monoethanolamine (MEA)	141-43-5	205-483-3	603-030-00-8	01-2119486455-28-0009	≤ 0.5	C; R20/21/22; R34;	Acute tox.: Cat. 4 (Inhalation)	H332:
							Acute tox.: Cat. 4 (dermal)	H312:
							Acute toxicity: Cat. 4 (oral)	H302:
							Skin corr./irr.: Cat. 1B	H314:
							STOT single: Cat.3 (irr. to respiratory syst.)	H335:
Aquatic Chronic 3	H412:							
Water	7732-18-2	231-791-2	—	—	≤ 0.3	—	—	—

Hazard symbols deciphering is given in section 16.

4. FIRST-AID MEASURES

4.1 Description of first aid measures

4.1.1 General informations:

Remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary.

4.1.2 Following inhaled: Keep patient calm, remove to fresh air, seek medical attention. Immediately inhale corticosteroid.

4.1.3 Following skin contact: Wash thoroughly with soap and water.

- 4.1.4 Following eye contact:** Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.
- 4.1.5 Following ingestion:** Rinse mouth immediately and then drink plenty of water, seek medical attention.
- 4.1.6 Self-protection of the first aider:** Should pay attention to own safety.
- 4.1.7 Notes for the doctor:** Do not induce vomiting.
- 4.2 Most important symptoms and effects, both acute and delayed** Symptoms:
Overexposure may cause: vomiting, nausea, coughing, headache
- 4.3 Indication of any immediate medical attention and special treatment needed** Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing media: Water spray, dry extinguishing media, foam, carbon dioxide.

Unsuitable extinguishing media: ----

5.2 Special hazards arising from the substance or mixture:

Hazardous combustion products: Products of combustion are carbon oxides and nitrogen oxides, blood poison.

5.3 Advice for fire-fighters:

Wear self-contained breathing apparatus and chemical-protective clothing.

Do not approach to burning containers. Cool the containers with water from the maximum possible distance.

Precipitate the generated gases and vapors with sprayed water.

5.4 Additional information:

Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

6.1.1 For non-emergency personnel:

Protective equipment:

Avoid inhalation. Avoid contact with the skin, eyes and clothing.

The wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the SDS) to prevent any contamination of skin, eyes and personal clothing.

Emergency procedures:

Removal of ignition sources, provision of sufficient ventilation; the need to evacuate the danger area.

6.1.2 For emergency responders:

Personal protective equipment: Self-contained breathing apparatus and chemical-protective clothing.

6.2. Environmental precautions:

Do not discharge into drains/surface waters/groundwater.

6.3. Methods for cleaning up or taking up:

For large amounts: Pump off product.

For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr).

Dispose of absorbed material in accordance with regulations.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling:

7.1.1 Protective measures:

Fire preventions:

Sources of ignition to eliminate or isolate.

Prevent electrostatic charge. Fire extinguishers should be kept handy.

Aerosol preventions:

Ensure thorough ventilation of store and work areas.

Environmental precautions:

Hermeticity of equipment, product storage tanks, containers.

7.1.2 Advice on general occupational hygiene:

Not to eat, drink and smoke in work areas.

Wash hands after use.

Remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibilities:

Segregate from acids and acid forming substances.

Storage stability: Storage temperature: 20 - 40 °C.

Storage duration: 12 Months.

May discolour after lengthy storage.

Data on the storage life specified in the safety data are not a contractual guarantee of the properties of the product.

7.3 Specific end uses:

For a substance designed for a specific end use(s), recommendations attached in the exposure scenarios (exposure scenarios for identified uses described in Section 1.2 are included of Annex of SDS).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ensure preliminary and periodic medical examinations

8.1 Control parameters**8.1.1 Occupational exposure limits:**

Components with workplace control parameters:

111-42-2: 2,2'-iminodiethanol

Limit value Source type (country of origin)	Substance name	EC-№	CAS-№	Route	Values:
LOAEL (EU)	2,2'-iminodiethanol	203-868-0	111-42-2	oral	14 mg/kg bw/day
LOAEL (EU)				dermal	8 mg/kg bw/day
NOAEC (EU):				inhalation	3 mg/m ³

8.1.2 DNEL/PNEC-values:**DNEL -values:**

DNEL		Exposure route	Exposure frequency
for workers	for the general population		
0.13 mg/kg bw/day	0.07 mg/kg bw/day	Dermal	Long-term - systemic effects
-	0.06 mg/kg bw/day	Oral	Long-term - systemic effects
1 mg/m ³	0.25 mg/m ³	Inhalation	Long-term - local effects

Relevant DNELs for the diethanolamine given in the exposure scenarios of the chemical safety report set out in the annex to the SDS.

PNEC-values:

Compartments	PNEC
PNEC water	
PNEC aqua (freshwater):	0.0022 mg/L
PNEC aqua (marine water):	0.00022 mg/L
PNEC aqua (intermittent releases):	0.022 mg/L
PNEC sediment	
PNEC sediment (freshwater):	0.019 mg/kg sediment dw
PNEC sediment (marine water):	0.0019 mg/kg sediment dw
PNEC soil	
PNEC soil:	0.00108 mg/kg soil dw
PNEC sewage treatment plant	
PNEC STP:	100 mg/L

Relevant PNECs for the diethanolamine given in the exposure scenarios of the chemical safety report set out in the annex to the SDS.

8.2. Exposure controls:

The full range of specific risk management measures to be taken during use in order to minimise worker and environmental exposure.

8.2.1 Appropriate engineering controls:

Hermeticity of equipment, product storage tanks, containers.

Ensure thorough ventilation of store and work areas.

Periodically control the content of harmful substances in the air of the working zone.

Handle in accordance with good industrial hygiene and safety practice.

8.2.2 Personal protective equipment:**8.2.2.1 Eye protection:**

Tightly fitting safety goggles (splash goggles) (e.g. EN 166) or face shield.

8.2.2.2 Skin protection:**Hand protection**

Suitable chemical resistant safety gloves (EN 374) also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374): E.g. nitrile rubber (0.4 mm), chloroprene rubber (0.5 mm), butyl rubber (0.7 mm) and other Manufacturer's directions for use should be observed because of great diversity of types.

Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing.

Body protection:

Closed work clothing.

8.2.2.3 Respiratory protection:

In case of insufficient ventilation and in case of vapor / aerosol respiratory protection is required.

Use in case of accidents – filter gas-masks to ensure protection against vapors of organic compounds.

8.2.2.4 General safety and hygiene measures:

Handle in accordance with good industrial hygiene and safety practice.

Avoid contact with the skin, eyes and clothing.

8.2.3 Exposure controls of environmental impact:

Discharge into the environment must be avoided.

To execute the full range of specific RMM and OC required to fulfill commitment under community environmental legislation.

Adequately control the impact of diethanolamine on the environment is given in the exposure scenarios, annexed to the SDS.

8.2.4 Consumer exposure control:

The product is not intended for use in the home.

9. PHYSICAL AND CHEMICAL PROPERTIES

Property	Results
Physical state at 20°C and 1013 hPa	The substance is an organic, colourless solid, sometimes a syrupy liquid, with an ammonia like odour.
Melting / freezing point	27 °C
Boiling point	269.9 °C at 1013.25 hPa
Relative density	ca. 1.1 g/cm ³ at 20 °C
Vapour pressure	0,028 hPa at 25 °C
Surface tension	not surface active
Water solubility	miscible
Partition coefficient n-octanol/water (log value)	- 2.18 (25 °C; pH 7.15)
Flash point	Not applicable
Flammability	combustible solid but not easily ignitable The substance has no pyrophoric properties and does not liberate flammable gases on contact with water.

Explosive properties	non explosive
Self-ignition temperature	355 °C at 1013 hPa
Oxidising properties	no oxidising properties
Granulometry	not applicable
Stability in organic solvents and identity of relevant degradation products	not applicable
Dissociation constant	8.99 at 25 °C
Viscosity	not applicable

10. STABILITY AND REACTIVITY

10.1. Reactivity

No hazardous reactions if stored and handled as prescribed/indicated.

10.2 Chemical stability:

Diethanolamine is stable when rules of storage and use are observed.

Thermal decomposition: 285 °C, 450 kJ/kg (DSC (DIN 51007)).

10.3. Possibility of hazardous reactions

Strong exothermic reaction with acids.

Reacts with oxidizing agents. Reacts with halogenated compounds. Reacts with acid chlorides. Incompatible with acid chlorides and acid anhydrides.

10.4. Conditions to avoid

Avoid extreme temperatures. See MSDS section 7 - Handling and storage.

10.5. Incompatible materials

Substances to be avoided: oxidizing agents, acids, acid-forming substances and isocyanates.

10.6 Hazardous decomposition products

Carbon oxides and nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

11.1 Toxicokinetics, metabolism and distribution

Basic toxicokinetics:

DEA is well absorbed following oral administration in rats (57%). DEA is cleared from the tissues with a half-life of approximately 6 days. The highest concentrations are observed in liver and kidney.

11.2 Information on toxicological effects:

11.2.1 Short-term effects:

Acute toxicity:

	Effect dose	Method	Remark
Acute oral toxicity	LD50: ≈ 1.600 mg/kg	Rats (Test-BASF)	
Acute dermal toxicity			No reliable acute dermal toxicity data is available.
Acute inhalative toxicity		(Test-BASF)	No mortality within 8 hours as shown in animal studies. The inhalation of a highly saturated vapor-air mixture represents no acute hazard.

Assessment of acute toxicity:

Of moderate toxicity after single ingestion. Virtually nontoxic after a single skin contact. The substance can be absorbed through the skin.

Skin corrosion / irritation:

Skin irritation / corrosion: irritating.

Serious eye damage/irritation:

Eye irritation: highly irritating.

The European Union (EU) has classified this substance with «Risk of serious damage to eyes» (R41).

Respiratory or skin sensitisation:

Not sensitising.

11.2.3 CMR-effects:

Carcinogenicity:	DEA is not considered carcinogenic for humans. Under certain conditions the substance can form nitrosamines. Nitrosamines are carcinogenic in animal studies.
Mutagenicity:	DEA did not cause gene mutations (no mutagenic effect was found in various tests with bacteria and mammalian cell culture; the substance was not mutagenic in a test with mammals). Genetic toxicity: negative.
Toxicity for reproduction:	Assessment of teratogenicity: In animal studies the substance did not cause malformations.
STOT-single exposure	Exp. 2 (Hazard statement: H373: May cause damage to organs through prolonged or repeated exposure). Affected organs: liver, blood and kidney. Route of exposure: Oral

12. ECOLOGICAL INFORMATION

Due to the results of the aquatic toxicity studies and the relevant mammalian toxicity studies the substance has to be regarded as toxic (T).

12.1. Ecotoxicity:**Acute toxicity:**

	Effect dose	Exposure time	Species	Method	Evaluation
Acute fish toxicity	LC50	96 h	Pimephales promelas	ASTM-Standard E 729-80	1460 mg/l
Acute daphnia toxicity	EC50	48 h	Daphnia magna	EPA 660/3-75-009 (static)	55 mg/l
Acute algae toxicity	EC50	96 h	Pseudokirchneriella subcapitata	EPA 600/9-78-018	2.2 mg/l
Acute microorganisms toxicity	EC10	30 min	Activated sludge, domestic.	OECD Guideline 209	> 1000 mg/L

Longterm-Ecotoxicity:

	Effect dose	Exposure time	Species	Method	Evaluation
Long-term effects on aquatic invertebrates	NOEC	21 day	Daphnia magna	Draft EEC-guideline XI/681/86 (semi-static)	0,78 mg/L

Toxicity test results:

With high probability acutely not harmful to fish.

Acutely harmful to aquatic invertebrates.

Acutely toxic for algae.

12.2 Persistence and degradability:

Readily biodegradable (according to OECD criteria).

Physical- and photo-chemical elimination:

Hydrolysis: According to structural properties, hydrolysis is not expected/probable.

Phototransformation

in air: After evaporation or exposure the air, the product will rapidly degrade by indirect photochemical processes.

in water: Radily biodegradable.

in soil: Radily biodegradable.

Biodegradation in water:

90 - 100 % BOD of the ThOD (28 d) (OECD 301F; ISO 9408; 92/69/EEC, C.4-D) (aerobic, activated sludge, domestic).

12.3 Bioaccumulative potential:

Log Kow (Pow): -2.18 at 25 °C.

Because of the n-octanol/water distribution coefficient (log Pow) accumulation in organisms is not to be expected. Bioaccumulation the substance is not bioaccumulative (not B) and not very bioaccumulative (not vB).

12.4 Mobility in soil

Assessment transport between environmental compartments:

The substance will not evaporate into the atmosphere from the water surface. Adsorption to solid soil phase is not expected.

12.5 PBT or vPvB Properties Assessment:

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification.

12.6 Additional information:

Due to the pH-value of the product, neutralization is generally required before discharging sewage into treatment plants.

13. DISPOSAL CONSIDERATIONS*Waste treatment methods*

Incinerate in suitable incineration plant, observing local authority regulations.

Waste codes / waste designations according to EWC / AVV:

A waste code in accordance with the European waste catalog (EWC) cannot be specified, due to dependence on the usage.

The waste code in accordance with the European waste catalog (EWC) must be specified in cooperation with disposal agency/manufacturer/authorities.

Contaminated packaging:

contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

14. TRANSPORT INFORMATION**Land transport
(ADR/RID/GGVSE):**

In accordance with the transport regulation the product is not a hazardous cargo.

**Sea transport (IMDG -
Code/GGVSee):**

In accordance with the transport regulation the product is not a hazardous cargo.

**Air transport (ICAO-
IATA/DGR):**

In accordance with the transport regulation the product is not a hazardous cargo.

15. REGULATORY INFORMATION**15.1 Regulations of the European Union (labeling):**

Hazard determining component for labelling: DIETHANOLAMINE.

ECN^o: 203-868-0

Regulations:

- as in Annex I of Directive 67/548/EEC;
- according to Regulation (EC) No 1272/2008.

S-phrases for diethanolamine are in accordance with the Directive 67/548/EEC of June 27, 1967 for harmonization of legal and administrative regulations on classification, packing and labeling of dangerous substances:

- S26 - in case of contact with eyes, rinse immediately with plenty of water and seek medical advice;
- S36/37/39 - wear suitable protective clothing, gloves and eye/face protection;
- S46 - In case of ingestion, seek medical assistance immediately; show the container and the label of the product if possible.

15.2 Chemical Safety Assessment:

For diethanolamine has been carried out a chemical safety assessment.

16. OTHER INFORMATION

16.1 Key source for data: CHEMICAL SAFETY REPORT.

16.2 Deciphering of the hazard symbols, R-phrases and hazard statements listed in section 3.

Hazard symbols:

Xi – irritant;
Xn – harmful;
C – corrosive.

R-phrases:

22 – dangerous if enters the organism;
38 – causes skin irritation;
41 – risk of serious damage of the eyes;
48/22 – dangerous because of the possible serious health damage in case of long-term entering the organism;
20/21/22 – harmful by inhalation, in contact with skin and if swallowed;
34 – causes burns.

Hazard statements:

H302: Harmful if swallowed.
H315: Causes skin irritation.
H318: Causes serious eye damage.
H373: May cause damage to organs.
H412: Harmful to aquatic life with long lasting effects.
H332: Harmful if inhaled.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage
H335: May cause respiratory irritation.

16.3 Application to the SDS:

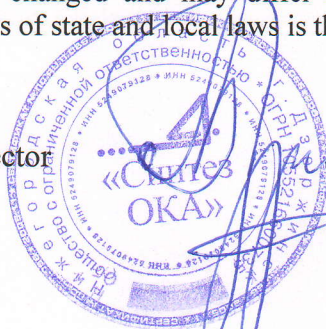
Exposure scenarios for identified uses described in Section 1.2 are annexed to the SDS.

16.4 Further information:

Vertical lines in the left hand margin indicate an amendment from the previous version.

The above information is presented herein in good faith and is based on the current knowledge on the material. Standard requirements may be changed and may differ in different locations of the companies. Providing the compliance with the requirements of state and local laws is the responsibility of the Buyer.

Technical Director



A.M. Burtsev